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ABSTRACT

The Self-Regulated Learning Inventory was developed to help researchers and teachers understand the concept of self-regulated learning and to provide a tool for identifying behaviors students need for academic success. Version One of the instrument contained 71 items representing the factors of metacognition, learning strategies, motivation, contextual sensitivity, and environmental control/utilization. Following a pilot study with responses of 104 undergraduates, a second version was constructed based on a formalized provisional model of self-regulated learning. A number of unpublished studies were conducted to evaluate Version Two, and these led to the construction of a third version based on a four-factor model of executive processing, cognitive processing, motivation, and environment control/utilization. Version 3 contained 80 items, divided evenly among the 4 subscales. Testing with 219 undergraduates and 62 graduate students supported the reliability of the version. Separate factor analyses for graduate and undergraduate students supported a four-factor solution in either case. Results from this study suggested a strong relationship between self-regulated learning and grade point average. (Contains 7 tables, 1 figure, and 18 references.) (SLD)

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A factor analytic study of the Self-Regulated Learning Inventory

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Many of today's college students appear to be less well prepared for the rigors and challenge of a university education than in years past. In many ways, the university environment is less structured than that of most high schools, and therefore demands a high level of independent learning that many students can find overwhelming. It appears that neither their previous school experience in general nor the fact of having, in some cases prior college level coursework, has readied them for the requirements and skills necessary for academic success at the university level. Perhaps, given the fact that higher order, self-reflective learning skills are rarely taught in the context of the standard school curriculum (Gall, Gall, Jacobsen & Bullock, 1990), this finding should not come as a surprise. The upshot, however, is that an alarmingly large percentage of college students fail to graduate and, in general, appear doomed to academic failure at the university level.

Universities have over the years attempted to assist these students by providing them access to academic counselors and/or classes and workshops which are designed to teach study skills and strategies (Dansereau, 1985, Kulik, Kulik & Schwalb, 1983, Weinstein & Underwood, 1985). Unfortunately, such efforts have been far less successful than they might be. More often than not, traditional approaches to study skills training (due in part to the fact that they are typically based more on intuition and practical needs than a sound research base) are less effective than they might be (Thomas & Rohwer, 1986). In an attempt to help improve the success rate of such classes and thus increase student academic achievement, researchers (e.g., Brown & Holtzman, 1967; Lindner & Harris, 1992; Michael, Michael & Zimmerman, 1972; Weinstein , Palmer & Schulte, 1987) have developed a number of instruments which can be used to assess the weakness' (and/or strengths') individual students have in the skills, attitudes, and behaviors most closely related to academic success. Based upon results from these instruments, specific activities can be suggested for the student to use to help achieve academic success. Many of these instruments can be loosely grouped under the rubric of measures of self-regulation. Though some of the instruments currently used today were developed through empirical research techniques, and are designed to measure the various behaviors, skills, and attitudes shown to be associated with academic success, to our knowledge only the *Self-Regulated Learning Inventory* (Lindner & Harris, 1992; Lindner, Harris & Gordon, 1995) was developed from a theoretical model followed by empirical research.

The *Self-Regulated Learning Inventory* (Lindner & Harris, 1992; Lindner, Harris & Gordon, 1995) was developed for three main reasons. First, to help both researchers and teachers better understand the construct of self-regulation as it relates to academic success of students; second, to provide a new more powerful tool for use in identifying the behaviors, skills and attitudes students need to help achieve academic success; and third, to provide diagnostic insight into the needs or learning problems of particular individuals. Additionally, it is hoped that the instrument will prove useful by providing academic support programs, admission offices, and other such personnel, with a theoretically derived and empirically grounded instrument which

can with a high degree of accuracy predict future academic success of (undergraduate as well as graduate) college students. In developing the *Self-Regulated Learning Inventory*, in-depth literature reviews were undertaken in the areas of metacognition, cognition, learning strategies, motivation, epistemological beliefs, and environmental control, to name a few. Following this, items were developed, and over the past five years, the instrument has gone through a number of revisions. These revisions were based upon results from pilot testing of the instrument, and further refinement of the model. *Versions One* and *Two* showed positive results in both instrument validity and reliability. Preliminary data analysis of the most recent version (*Version Three*) of the instrument shows very positive and promising results in both its ability to accurately identify the strengths and weakness of a student in terms of their self-regulating ability, and in terms of the instruments reliability and validity.

What follows represents both a brief history of the development of the inventory and findings based on the latest version of the inventory. More specifically, the purpose of the present study is to report on an exploratory factor analytic investigation of the responses to the inventory as a whole as well as its subscales in its latest iteration.

DEVELOPMENT OF THE SELF-REGULATED LEARNING INVENTORY

Version One

Initial development of the *Self-Regulated Learning Inventory* began in 1991, and over the last five years of development has undergone a number of theoretical, conceptual and design changes. *Version One* of the inventory contained 71 items representing five subscales or factors (**metacognition** [17 items], **learning strategies** [18 items], **motivation** [15 items], **contextual sensitivity** [11 items], and **environmental control/utilization** [10 items]). These subscales were arrived at after a thorough review of the research literature in the areas which looked at the relationship between learner generated activities (i.e., highlighting, underlining, rereading, organizational skills) and measures of academic success (e.g., GPA, standardized test scores). The final factors were arrived at because research reported them to have the strongest correlations. In arriving at the final 71 items, an initial item pool of approximately 100 items was generated. The items were then analyzed removing those items which were too much alike and rewriting those which were too vague or too complex. Questions on each subscale were designed to be responded to using a five point Likert scale, ranging from **Almost always typical of me** to **Not at all typical of me**. A pilot study was then conducted to detect any problems in the instructions or ambiguity in the items, to determine how long it took to complete the inventory, and to gather initial data concerning the psychometric properties of the instrument (Lindner & Harris, 1991). The pilot study involved 120 students (both undergraduate and graduate) attending a medium sized midwestern university enrolled in courses in the college of education. Results were generated on 104 students who completed both the biographical information sheet and the inventory. First, inter-item correlations were examined between each of the 71 items and GPA . Next, reliability coefficients for the five subscales were computed which ranged from .59 to .77. Finally, correlations between the five subscales and total scale (SRLTOT: self-regulated learning) with GPA were computed (metacognition .46, learning strategies .46, motivation .45, contextual sensitivity .29, and environmental control/utilization

.40; SRLTOT .56); all were significant at the $p<.01$ level. Based upon the results from this study, it was determined that six items needed to be rewritten prior to proceeding with a larger study. In addition, a formal set of instructions were written.

A study was then conducted to further examine the psychometric properties of the instrument. This study (Lindner & Harris, 1992) involved 160 students, again representing both undergraduate and graduates, with a mean age of 22.8 years old. Analysis of internal reliability of the inventory and its subscales revealed alpha coefficients ranging from a low of .64 (contextual sensitivity) to a high of .83 (learning strategies), a marked improvement over the pilot study. Correlations between GPA and the five subscales and total scale yielded coefficients between .30 (contextual sensitivity) and .54 (SRLTOT), again all being significant at the $p<.01$ level. In addition, a test-retest reliability coefficient of .78 was achieved, with an eight week delay between times of testing. Results of an exploratory factor analysis, followed by a varimax factor rotation, revealed a two factor model that accounted for 30.4% of the variance: a general factor we labeled *self-regulated learning*, consisting of 52 items representing all five subscales, and a *self-efficacy* (or motivation) factor represented by 13 of the 15 items from the motivation subscale. Unfortunately, an additional 18 factors, small but statistically significant, also appeared, which complicated our ability to make any clear-cut conclusions concerning the instrument's construct validity.

Based upon the results of these studies we concluded two important findings: (1) that self-regulated learning is an important component in achieving academic success and that it can be measured, with some degree of accuracy, via the *Self-Regulated Learning Inventory*; and (2) that a substantial relationship exists between self-regulated learning and GPA. Furthermore, these results were seen as being in line with current literature concerning self-regulated learning (c.f. Zimmerman, 1990; Zimmerman & Pons, 1986, 1988). However, due to the poor fit between the five factor model the inventory was developed around and the results of the exploratory factor analysis, it was concluded that further refinement of the instrument was necessary.

Version Two

This revision was based on two motives. First, was the our development of a formalized provisional model used to more accurately define the components which best describe the self-regulating person (student). The model identified self-regulation as a complex interaction of six components: metacognition, learning strategies, motivation, epistemological beliefs, contextual sensitivity, and environmental control/utilization. These components were selected as a result of our further reading, discussions, and analysis of the literature which lead us to conclude that individuals bring to the learning situation (1) a largely unconscience frame of reference comprised of beliefs about the nature of knowledge and the process of knowing (Perry, 1968; Schommer, 1990), (2) a particular motivational orientation and set of values (Dweck, 1989), (3) a specific propensity for monitoring, evaluating and, generally, reflecting over one's cognitive activity (Flavel, 1979; Brown, 1987), (4) a level of strategic knowledge about how to effectively and efficiently process information (Pressley, et.al., 1990), (5) a characteristic degree of sensitivity to contextual cues that facilitate or afford learning or problem solving, and (6) a specific level of understanding of how to effectively utilize and/or control environmental conditions such that learning goals are most likely to be achieved (Nelson-Le-Gall, 1985; Zimmerman & Martinez-Pons, 1986). From our reading and research, we also concluded that

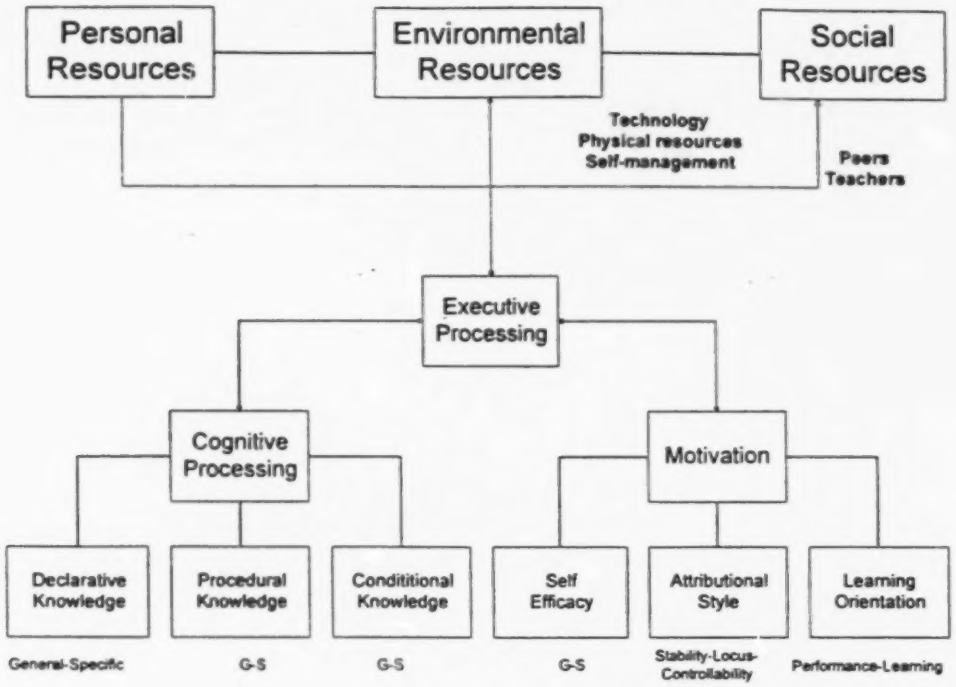
metacognition, although mediated by, and dependent upon, the other components identified, represents the key to understanding self-regulation of the learning process. Our second motive, was the results from an in-depth item analysis of *Version One*. For this part, items which failed to correlate significantly with either the total scale on the inventory or GPA were eliminated, and revisions were made to those remaining items which proved confusing or unclear. Further revisions included equalizing the number of items on each of the subscales to 15, and the development of an epistemological beliefs subscale, based primarily on the work by Schommer (1990) which assessed the mediating role epistemological beliefs play with respect to learning related behaviors This subscale also contained 15 items, which were responded to on a five point Likert scale ranging from **Strongly agree** to **Strongly disagree**. Thus, the resulting version provided information in two distinct though highly related areas: the self-regulation component consisting of 90 items divided equally among six subscales (**metacognition, learning strategies, motivation, epistemological beliefs, contextual sensitivity,** and **environmental control/utilization**), and 15 items on the **epistemological beliefs** component.

A number of in-house unpublished studies were conducted utilizing *Version Two* of the *Self-Regulated Learning Inventory* to assess it's psychometric properties and how they fit the proposed model. Though somewhat positive findings were seen in the data analysis from several studies utilizing both item analysis and exploratory factor analysis to examine the fit between the model and the inventory itself, overall results showed the need for further refinement of both the model and the instrument. Exploratory factor analysis revealed that even though the instrument itself assessed the general construct of self-regulation, the individual hypothesized subscales were not as clearly defined or identified by the instrument as was hoped for. Furthermore, the epistemological belief component, though providing interesting leads, added little to the overall understanding of the concept of self-regulation, and was subsequently dropped for the inventory.

Version Three

Through additional analysis of the items on both *Versions One* and *Two* of the *Self-Regulated Learning Inventory*, a more rigorous review and analysis of the research literature, and further refinement of the model (see Figure 1) we developed a new four factor model (**executive processing, cognitive processing, motivation**, and **environment control/utilization**) which we felt better represented the interactions and dynamics of self regulation. Items contained in *Version Three* included items from *Versions One* or *Two* which again showed a significant correlation with either the total scale on the inventory or GPA, and which were reexamined for distinctness and then placed on the most appropriate scale according to the new model. Additional, new questions were developed based upon the model to maintain the desire for the inventory to contain an equal number of items on each subscale. The final result was an inventory containing 80 items, divided evenly among the four subscales. A study was then conducted to examine the validity of the instrument as it relates to the construct and model we developed concerning the self-regulated learner.

Figure 1. Self-Regulated Learning Model Used in the Development of Version 3 of the *Self-Regulated Learning Inventory.*



METHOD

Subjects

This study took place at a medium sized university located in the midwest. It involved a sample of 281 students, all enrolled in courses in the college of education. There were 191 (60.0%) females, 81 (28.8%) males, and 9 (3.2%) who elected not to respond. The sample contained 248 (88.3%) Whites, 10 (3.6%) Blacks, 7 (3.2%) Hispanics, 2 (.7%) Asians, 2 (.7%) Native Americans, 6 (2.1) other, and 6 (2.1%) who did not respond. There were 219 (77.9%) undergraduates (1 freshman, 18 sophomores, 97 juniors, 103 seniors), and 62 (22.1%) graduate students, overall ranging in age from 19 years old to 53 years old, with a mean of 24.89 (sd=7.24) years old. The age range for the undergraduate students was from 19 yeas old to 46 years old, with a mean age of 22.71 (sd=4.82) years old; graduate students ranged in age from 20 years old to 53 years old, with a mean age of 32.5 (sd=8.96) years old. Their GPA ranged from a 2.00 to a 4.00; the mean GPA was 3.22 (sd=.53). Undergraduate students GPA ranged from 2.00 to 4.00, with a mean of 3.11 (sd=.50); graduate students GPA ranged from 2.50 to 4.00, with a mean of 3.72 (sd=.37). Over half (55.5%) of the students came from a rural setting (n=156), while 27.4% came from a suburban setting (n=77), and 13.9% from a urban setting; nine (3.2%) did not respond.

Procedure

The *Self-Regulated Learning Inventory V3.0* was administered in every case by one of the three researchers in a variety of courses offered in the college of education. A standard set of instructions was read to intact classes who then completed the inventory as instructed. The inventory consists of 80 items divided equally among four subscales or factors **(executive processing** {EXPS}, **cognitive processing** {COGS}, **motivation** {MOTS}, and **environment control/utilization** {ECUS}). Each item is responded to on a 5-point Likert scale ranging from **Almost always typical of me** (5) to **Not at all typical of me** (1). To help prevent students from simply marking all fives, a number of items on each scale were negatively worded. These items were recoded in the data analysis so that a 1 became a 5, a 2 became a 4, 3 stayed a 3, 4 became a 2, and a 5 became a 1. This resulted in that each factor had a range of scores from a low of 20 to a high of 100; the total self-regulated learning (SRLTOT) scale ranged from a low of 80 to a high of 400. Completion of the inventory was strictly voluntary, though in some of the undergraduate classes the students were given one extra credit point for participating in the study.

RESULTS

We first report on findings that relate to the technical properties of the inventory. Table 1 shows the mean, standard deviation, and range for the four subscales and the total scale. Looking at the four subscale scores, it can be seen that the lowest mean score was on the environment control/utilization scale and the highest mean score was on the motivation scale. This trend of going from the lowest mean score on the environment control/utilization, to the highest mean score on the motivation factor was also seen in the group breakdowns for both gender and academic rank (undergraduate vs. graduate).

Table 1. Mean, Standard Deviation, Range and Number for Subscale Scores and Total Scale

Variable	Mean	sd	Minimum	Maximum	N
EXPS	67.06	10.34	39	98	275
COGS	69.54	9.84	36	93	277
MOTS	71.97	9.06	48	93	273
ECUS	65.42	11.33	30	93	276
SRLTOT	273.79	34.34	185	369	267

An analysis of internal reliability of the inventory and its subscales (factors) revealed alpha coefficients ranging from a high of .93 (SRLTOT) to a low of .78 (motivation); see table 2. These coefficients indicate that in addition to the total inventory, each factor shows high internal reliability. Evidence for validity, though, was somewhat mixed. An analysis of the correlations between subscale scores on the inventory and GPA, our measure of academic achievement, revealed highly significant correlations for the inventory as a whole and for each of the subscales

(see table 3), though some correlations were not as large as expected. However, these results do correspond to findings reported in the supporting literature and provide evidence of concurrent validity.

Table 2. Alpha for each Subscale and Total Scale

Scale	Alpha
EXPS (Executive processing)	.82
COGS (Cognitive processing)	.82
MOTS (Motivation)	.78
ECUS (Environment Control/utilization)	.83
SRLTOT (Self-regulated learning total score)	.93

Table 3. Correlation Coefficients Between Scale Scores on the Inventory and GPA

	EXPS	COGS	MOTS	ECUS	SRLTOT
COGS	.78***				
MOTS	.60***	.51***			
ECUS	.62***	.52***	.63***		
SRLTOT	.89***	.84***	.80***	.83***	
GPA	.23***	.31***	.46***	.26***	.37***

***p<.001

The results of an exploratory factor analysis utilizing principal component analysis, followed by a varimax factor rotation, were inconclusive, in that there appeared to be both a five factor solution which accounted for 35.3% of the variance, and a four factor solution which accounted for 32.1% of the variance. In both analyses there were a number of other small but significant factors, which further complicated our ability to make a clear-cut conclusion with respect to construct validity.

Since several of our previous studies involving earlier versions of the *Self-Regulated Learning Inventory* had shown that undergraduate and graduate students respond differently, and the fact that the exploratory factor analysis only moderately supported our proposed four factor model, we decided to examine each group separately. Also, ANOVA analyses revealed significant differences between undergraduate and graduate students for mean scores on each of the four subscales and the mean total scale. Table 4 shows the means and standard deviations for each subscale and the total scale by academic rank (undergraduate or graduate). Differences also were seen in the correlations between the inventory subscales and GPA for the two groups (see table 5).

Table 4. Means and Standard Deviations for each Subscale and Total Scale scores on the Inventory by Academic Rank

	Undergraduates	Graduates	All Students
EXPS			
Mean	66.31	69.71*	67.06
sd	10.05	10.96	10.34
n	215	60	275
COGS			
Mean	68.19	74.40***	69.54
sd	9.40	9.92	9.84
n	217	60	277
MOTS			
Mean	71.19	74.88***	71.97
sd	9.15	8.15	9.06
n	215	58	273
ECUS			
Mean	64.38	64.10***	65.42
sd	11.12	11.38	11.33
n	215	61	276
SRLTOT			
Mean	270.09	287.46**	273.79
sd	33.37	34.71	34.34
n	210	57	267

* p<.05; *** p<.001

Table 5. Correlation Coefficients Between Scale Scores on the Inventory and GPA by Group

Undergraduates					
	EXPS	COGS	MOTS	ECUS	SRLTOT
COGS	.78***				
MOTS	.60***	.51***			
ECUS	.56***	.50***	.62***		
SRLTOT	.88***	.83***	.81***	.82***	
GPA	.16**	.24***	.46***	.19***	.30***
Graduates					
	EXPS	COGS	MOTS	ECUS	SRLTOT
COGS	.75***				
MOTS	.57***	.45***			
ECUS	.75***	.50***	.59***		
SRLTOT	.92***	.83***	.75***	.87***	
GPA	.28	.15	.31*	.24	.32*

*p<.05; ***p<.001

As a result of the significant differences between the undergraduate and graduate students on the subscales and total scale scores, separate exploratory factor analysis followed by varimax rotation was performed for each group. For the undergraduates, a four factor solution (table 6) was obtained, accounting for 31.4% of the variance. The first factor contained 14 items from the executive processing subscale, 12 items from the cognitive processing subscale, 3 items from the motivation subscale, and 1 item from the environmental control/utilization subscale. The second factor contained 9 items from the environmental control/utilization subscale, 5 items each from the executive processing and motivation subscales, and 3 items from the cognitive processing subscale. Factor three contained 8 items from the environmental control/utilization subscale 6 items from the motivation subscale, and 1 item from the cognitive processing subscale. The fourth factor contained 6 items from the motivation subscale, 4 items from the cognitive subscale, and 2 items each from the executive processing and environmental control/utilization subscales.

As with the undergraduates, the graduate students also resulted in a four factor solution; however, a number of the items loaded on different factors (see table 6). This four factor solution accounted for 38.8% of the variance. The first factor contained 13 items from the cognitive processing subscale, 12 items from the executive processing subscale, 3 items from the motivation subscale, and 2 items from the environmental control/utilization subscale. The second factor contained 9 items from the environmental control/utilization subscale, 3 items each from the cognitive processing and motivation subscales, and 2 items from the executive processing subscale. Factor three contained 9 items from the motivation subscale, 4 items from the environmental control/utilization subscale, and 3 items each from the executive processing and cognitive processing subscales. The fourth factor contained 5 items each from the motivation and environmental control/utilization subscales, 3 items from the executive processing subscale, and, 1 item from the cognitive processing subscale.

Table 6. Number of Inventory Items Loading on each Factor by Group

Undergraduates

	EXPS	COGS	MOTS	ECUS
Factor One	14	12	3	1
Factor Two	4	3	5	9
Factor Three	0	1	6	8
Factor Four	2	4	6	2

Graduates

	EXPS	COGS	MOTS	ECUS
Factor One	12	13	3	2
Factor Two	2	3	3	9
Factor Three	3	3	9	4
Factor Four	3	1	5	5

Table 7 shows the number of items that loaded on each factor that were common for all three factor analyses, broken down to show where the common items came from. For example, on Factor 1, 12 of the same items from the cognitive processing subscale, 7 of the same items from the executive processing subscale, and 1 of the same items from the environmental control/utilization subscale loaded on Factor 1 for all three analyses: graduate students, undergraduate students, and all students together. There were also 3 items loaded only on the graduate students analysis, and 6 from only the undergraduate students analysis. That is, all of the 29 items that loaded on Factor 1 in the factor analysis involving all the students, 20 of them also loaded on both the graduate and undergraduate students analysis, 3 loaded only on the graduate student analysis, and 6 on the undergraduate student analysis.

Table 7. Number of Items from Subscales Loading on Each Factor by Various Groups.

	Factor 1	Factor 2	Factor 3	Factor 4
Common with Graduates and Undergraduates	COGS 12 EXPS 7 ECUS 1	ECUS 5 MOT 1	0	0
Common with Graduates Only	3	2	12	4
Common with Undergraduates Only	6	3	0	0
None	0	13	4	7
Total Items	29	24	16	11

Discussion

The self-regulated learning perspective is seem as a complex, multifaceted, and interconnected phenomena which draws from several theoretical fronts. Helping define and identify those factors which most accurately encompass self-regulation would surely help reduce some of the confusion in the field, and therefore, better understanding on how to help nurture and develop this ability in students. Furthermore, and more importantly to educators, self-regulated learners are successful learners (Zimmerman & Martinez-Pons, 1986), and an instrument which efficiently and effectively identifies specific strengths and weaknesses in a student's approach to learning benefits everyone involved in the educational process.

Results from this study, and previous studies in the development of the *Self-Regulated Learning Inventory*, allow us to conclude that there is a strong relationship between self-regulated learning, as measured by our instrument, and GPA. In this study, looking at both undergraduate and graduate students as a group, correlations between GPA and all four subscales, as well as the total scale, ranged from .23 to .46, and were highly significant. The strongest correlation was found between the motivation subscale and GPA, followed by the overall scale and GPA, and then the cognitive processing subscale and GPA. Though the correlations were not as strong as we would have liked, we believe these correlations may be depressed due to problems associated with the restrict range of our GPAs. That is, no student

had a GPA less than 2.00, and over 50% of the students had a GPA of 3.00 or higher; the group mean was 3.22. Another reason we believe that the use of GPA may be problematic, is that through observation of our own students and informal discussions with other instructors, we see many students, although not scoring high in terms of self-regulation, nevertheless maintain a high GPA by either avoiding difficult classes or dropping them early in the semester. Thus, their scores on the inventory may depress the degree of relationship between the inventory scale and GPA. In a planned follow-up study involving students from colleges other than education, and students from other institutions, we hope to further explore this phenomena and hopefully shed some light on the reason for the results.

Concerning the high correlation between the motivation subscale and GPA, we believe this accurately reflects the skills most useful to students today if they wish to survive and succeed in higher education especially at the undergraduate level. Given that many undergraduate courses require minimal higher level thinking, by simply keeping up with the work, doing what is required, and sticking with the course, a student can earn a high grade in many courses. This type of attitude is best illustrated by items such as "*The grades I receive are pretty much a matter of how hard I work and how much time I put into studying.*", or "*Even if I find myself really struggling in a class, I don't give up but continue to try to do my best.*", or "*Even if a course becomes boring, or is less than interesting to begin with, I continue to work hard and to try to do my best.*". All of these items had means above 4.00, on the scale of 1 to 5. The fact that the overall inventory mean score was the second highest when correlated with GPA indicates that self-regulated learning involves a number of highly involved activities, such as cognitive processing skills, executive processing skills, and the ability to direct and control one's environment.

In the factor analysis, the four factor model did emerge, However, interpretation wasn't as clear-cut as we would have liked. The first factor took in a total of 29 items, 12 items each from both the executive processing and cognitive processing subscales, in addition to a few other items from the other two scales; due to the large number of items from the two subscales we assigned no label to this factor. The second factor contained a total of 24 items, 9 items from the environmental control/utilization subscale, 6 items from the executive processing subscale, 5 items from the motivation subscale, and 4 items from the cognitive processing subscale. Again we felt it inappropriate to give this factor a label. The other two factors also were not labeled due to the number of items loading on each factor from different subscales. Factor 3 contained 16 items while Factor 4 contained 11 items. Since a number of items failed to load on the hypothesized factor, we currently are analyzing each factor independently by going back to the actual items on the inventory analyzing them to determine what they have in common.

Although all three factor analyses did result in a four factor model, there were a number of differences in each. It may well be that graduate and undergraduate students, as a result of the types of courses they take, require different types of self-regulating behavior and thus is reflected in the different factor structures.

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SELF-REGULATED LEARNING INVENTORY 11/6/95

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Circle One

CLASS: F S Jr Sr Gr Other_____ GPA (on 4.0 scale): _____

SEX: M F AGE: _____

ETHNICITY: EA AA HA ASA NA Other_____ Social Security #: _____

HIGH SCHOOL: U S R

INSTRUCTIONS: Please read each statement and then circle a response according to the following key:

a = Almost always typical of me
b = Frequently typical of me
c = Somewhat typical of me
d = Not very typical of me
e = Not at all typical of me

Respond as candidly and completely as possible by selecting the response most descriptive of your usual approach, and/or attitude, toward academic coursework. Try to rate yourself according to how well the statement describes you, not in terms of how you think you should be or what others think of you. There are no right or wrong answers. Your responses will be kept strictly confidential and are for research purposes only. **Please complete all the items**.

Not at all typical of me
Not very typical of me
Somewhat typical of me
Frequently typical of me
Almost always typical of me

1. Studying is a mysterious process. Sometimes what I do is successful, other times it is not. But in either case, I really don't know why. a b c d e
2. I come to each class session prepared to discuss the assigned reading material (e.g., chapter, handout, articles). a b c d e
3. Mastery of new knowledge or skills is more important to me than how well I do compared to others. a b c d e
4. If I am struggling to understand the material presented in a course, I try to get some useful hints from someone who does. a b c d e
5. When reading a text or listening to a lecture, I consciously attempt to separate the main ideas from the supporting ideas. a b c d e
6. In classes where I find notetaking to be necessary, I review my notes from the previous class sometime before the next class meeting. a b c d e
7. In order to help me do my best and keep myself focused, I develop specific, short-term goals for the courses in which I am enrolled. a b c d e

Not at all typical of me
Not very typical of me
Somewhat typical of me
Frequently typical of me
Almost always typical of me

8. If I am having trouble understanding material as presented in a class or text, I try to locate and read different materials which help to explain or clarify the ideas with which I am having trouble. a b c d e
9. After studying new information for a class, I pause and perform a mental review in order to determine how much of what I have read I am able to recall. a b c d e
10. When reviewing my class notes, I try to identify the main points of a lecture by marking or highlighting them. a b c d e
11. When I fall behind most of the rest of the class in a subject, I worry I may not be smart enough to succeed. a b c d e
12. When unclear about material presented in class, one strategy I use is to check my notes against those of a classmate. a b c d e
13. When reading a text or reviewing my notes, I sometimes stop and ask myself: Am I understanding any of this? a b c d e
14. I try to pick out and write down the main points during a class lecture. a b c d e

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b. Not very typical of me
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15. To help me stay on track, I promise to reward myself if I do well on a test or in a course. a b c d e

16. When they are available and I feel I need the help, I participate in study group sessions. a b c d e

17. When evaluating my level of readiness before taking an exam, if I determine I am not quite ready, I construct a plan to help me be better prepared. a b c d e

18. To help me retain and understand what I am studying, I diagram, outline or otherwise organize the material I am learning. a b c d e

19. I find that if I'm not doing as well as I expected in a course, I become less motivated. a b c d e

20. When studying, I isolate myself from anything that might distract me. a b c d e

21. If my attention starts to drift when studying, I pull myself back on task by mentally saying things like: "Stay focused", "Work carefully", etc. a b c d e

22. To help me to understand and comprehend the material I am studying, I try to rephrase it in my own words. a b c d e

23. In deciding which classes or sections of a class to enroll in, I look for situations which offer a modest degree of challenge. a b c d e

24. I study pretty much on an "as the need arises" basis. a b c d e

25. After having taken an exam, I consciously try to determine how well I did in selecting and preparing for the concepts that actually appeared on the test. a b c d e

26. When learning unfamiliar material that is complex, I organize (e.g., outline, map) it in such a way that it fits logically together in my mind. a b c d e

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27. I only strive to do well in classes or courses that are important or interesting to me personally. a b c d e

28. When I study, I set aside a certain amount of time and choose an appropriate place where I will not be interrupted. a b c d e

29. When reviewing sections of a text or my notes in preparing for an exam, I deliberately pause and attempt to recall from memory everything I can about those sections before I reread them. a b c d e

30. To help make it easier for me to understand what I am studying, I try to relate it to or think of examples from my own life. a b c d e

31. Even if a course becomes boring, or is less than interesting to begin with, I continue to work hard and to try to do my best. a b c d e

32. Due to competing demands, I find it difficult to stick to a study schedule. a b c d e

33. Even when I feel like I put a lot of effort into preparing for an exam, I don't do as well as I expected. a b c d e

34. When learning new material, I try to elaborate, expand on, or otherwise add "life" to what I am learning. a b c d e

35. Whenever I am not doing as well in a course as I would like, my approach is to identify the problem and develop a plan to solve it. a b c d e

36. To help me accomplish the academic goals I have set, I develop, post and regularly review a plan or schedule to follow. a b c d e

37. After studying for an exam, I try to reflect on how effective my study strategy was in helping me learn the material on which I have been working. a b c d e

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38. When studying or learning concepts or ideas which are abstract, I try to visualize or think of a concrete situation or event in which they might be useful or occur. a b c d e

39. I feel confused and undecided about what my educational goals should be. a b c d e

40. Although I know what things I should be doing to get better grades, I often don't do them because of conflicts and distractions which come into my life. a b c d e

41. When studying, I mark or otherwise keep track of any concepts, terms, or ideas I do not fully understand. a b c d e

42. When I have to learn unfamiliar concepts or ideas which are related, I use mental imagery to help tie them together. a b c d e

43. Even when a class turns out to be more difficult or less interesting than I expected, it is still personally important for me to do my best. a b c d e

44. I study pretty much on a "cram the night before the exam" basis. a b c d e

45. When studying, instead of simply rereading everything twice, I go back and focus on the concepts, ideas, or procedures I found most difficult to understand or remember. a b c d e

46. If a topic I am learning is unfamiliar, I try to think of an analogy to ideas and/or experiences with which I am already familiar. a b c d e

47. Even when I find myself really struggling in a class, I don't give up but continue to try to do my best. a b c d e

48. Even when struggling in a course, I find it very difficult to go to my instructor and talk about the situation. a b c d e

49. Before reading a chapter in a textbook or other assigned reading, I first skim through the material to get a general idea of the topic and then ask myself, "What do I know about this topic already?" a b c d e

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50. When I have to learn or recall a lengthy set of related items from memory, I try to associate each item with an unusual image. a b c d e

51. I tend to believe that how much I learn from a given class or course is primarily determined by myself. a b c d e

52. To help me get the most from my courses, I ask questions or otherwise seek clarification from my instructors as much as I can. a b c d e

53. Before I begin to seriously study, I carefully examine and analyze the amount, familiarity and difficulty of the material I need to master in order to succeed. a b c d e

54. When studying for an exam, I have a hard time distinguishing the main ideas and concepts from the less important information. a b c d e

55. I approach most of my classes with considerable confidence because I know what I am capable of academically. a b c d e

56. If I do not understand something during a class meeting, I will ask for additional clarification. a b c d e

57. After preparing for an exam, I ask myself, "If I had to take a test on this topic right now, what grade would I expect? a b c d e

58. Before reading a chapter in the textbook, I read the review questions at the end of the chapter (or provided by the instructor) to help me decide what to focus on when studying. a b c d e

59. When learning becomes stressful or difficult, I actively try to get a handle on the situation by doing things such as increasing effort or seeking additional information to help clarify the task. a b c d e

60. I use a calendar/daily planner or otherwise keep track of my classes, assignments, and important dates. a b c d e

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61. When faced with a problem in my classes (e.g., preparing for an exam, writing a paper), to help me succeed I develop a plan or strategy to use as a guide and to evaluate my progress. a b c d e

62. During class presentations, I attend carefully to any cues the instructor provides about which concepts and ideas are the most important to learn and retain. a b c d e

63. I believe that ability is what determines academic success or failure a b c d e

64. Even when unsure if I understand what is being presented, I don't ask questions in class. a b c d e

65. After taking an exam, I review and evaluate the strategies I used in preparing for the exam to determine how effective I was and how I could use this information to improve in preparing for future exams. a b c d e

66. When taking notes in class, I usually try to organize (map, highlight, underline, outline, etc.) the information presented in a logical way. a b c d e

67. If I don't learn a concept or skill fairly quickly, I become discouraged and stop trying. a b c d e

68 In preparing for a class presentation or term paper, I carefully investigate and fully utilize the resources of the campus library. a b c d e

69. When preparing to study a chapter in a textbook or other reading material, in order to determine where I need to focus my attention, I first skim over the entire text to get a mental picture of how the material is presented. a b c d e

70. In reading from a textbook, I focus mostly on the meaning of specific words or terms. a b c d e

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71. I see grades as something an instructor gives rather than something a student earns. a b c d e

72. If I run into an unfamiliar word or term in my reading for a class, I stop and look it up in a dictionary. a b c d e

73. When stuck on a problem or in my attempt to comprehend material for a class, I try to think of an analogy or a comparison between my present situation and similar situations I have been in. a b c d e

74. During class lectures I find it difficult to separate the main points from the less important material. a b c d e

75. The grades I receive are pretty much a matter of how hard I work and how much time I put into studying. a b c d e

76. I turn my assignments in on time and keep-up with the assigned reading in my courses. a b c d e

77. When preparing for a class paper, project, or presentation, I not only think about the topic and create an outline to work from, but try to anticipate any questions the audience I am preparing for might have. a b c d e

78. I always try to learn new or unfamiliar material exactly as stated in my text or by my instructor. a b c d e

79. I enjoy taking courses that are challenging or cover unfamiliar subject material because they present the greatest opportunity for learning. a b c d e

80. Deciding how to most effectively utilize my time in preparing for exams is difficult for me. a b c d e